

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21541 - L2 Version 1
Chandra X-Ray Center

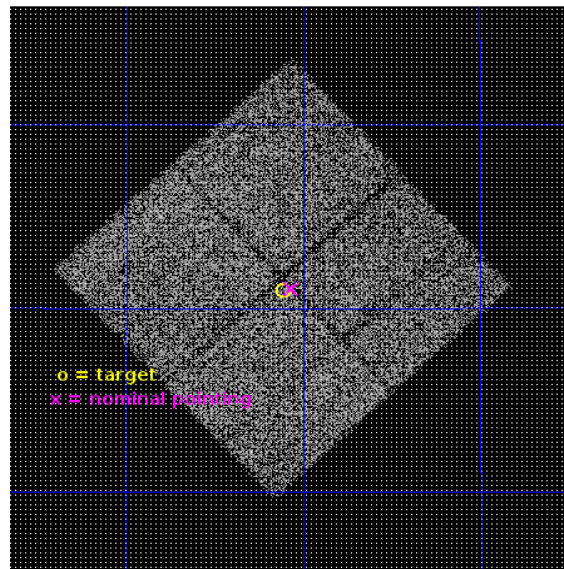
L2 Processing Date : Jan 12 2019

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1 Front

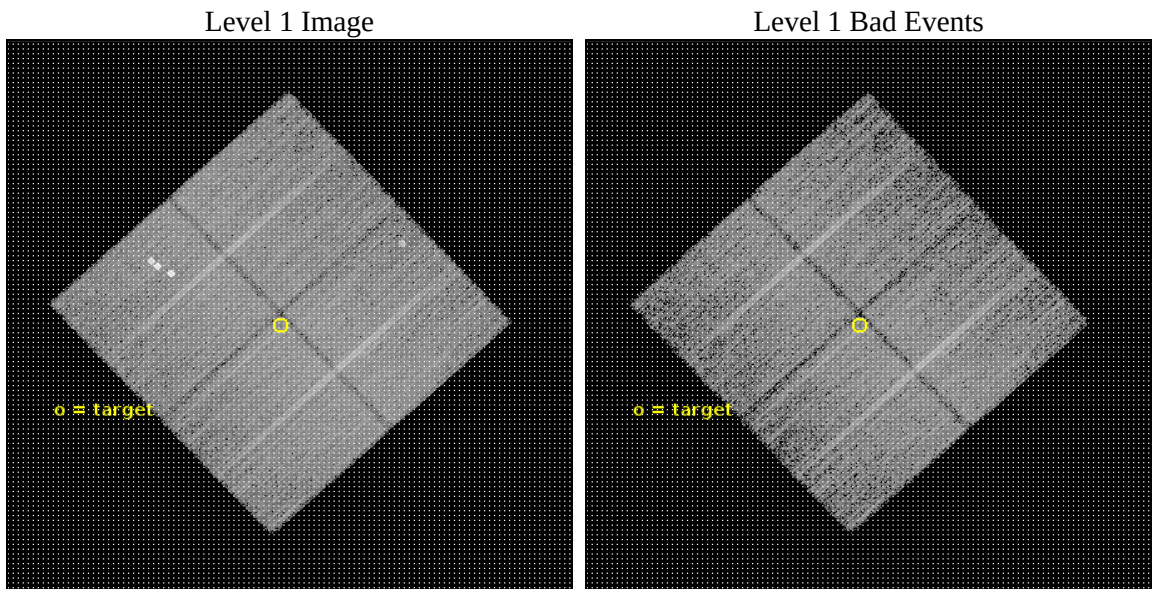
seq_num	801823	Sequence number
obs_id	21541	Observation id
title	A direct Chandra - Suzaku comparison of cluster outskirts	Proposal
observer	Andrea Morandi	Principal investigator
object	A773	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	139.277917	Observer's specified target RA [deg]
dec_targ	51.849472	Observer's specified target Dec [deg]
ra_nom	139.26654754837	Nominal RA [deg]
dec_nom	51.851287401115	Nominal Dec [deg]
roll_nom	137.21767308876	Nominal Roll [deg]
revision	1	Processing version of data
ontime	18079.159048796	Sum of GTIs [s]
livetime	17842.94152614	Livetime [s]
ontime0	18082.300139189	Sum of GTIs [s]
ontime1	18079.159068942	Sum of GTIs [s]
ontime2	18082.300139189	Sum of GTIs [s]
ontime3	18079.159048796	Sum of GTIs [s]
l2events	49436	Number of level 2 events



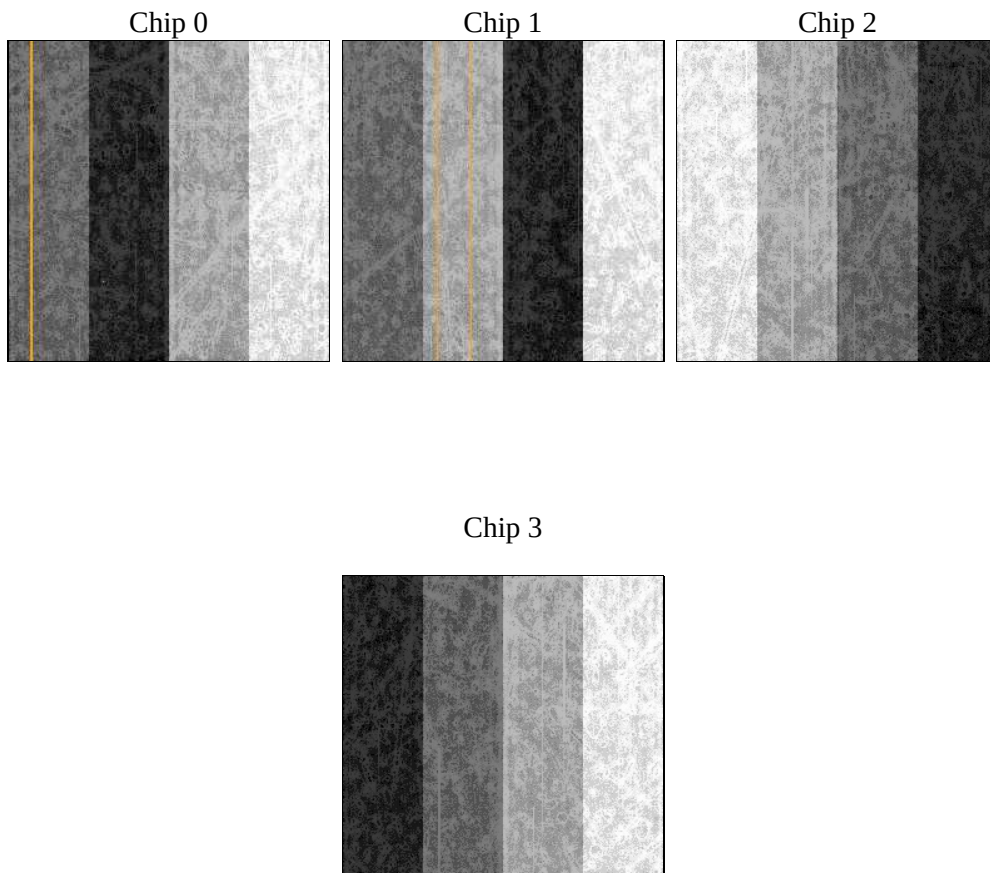
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	18000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	18079.159048796	Sum of GTIs [s]
caldsver	4.8.2	 	ontime0	18082.300139189	Sum of GTIs [s]
date	2019-01-12T07:02:31	Date and time of file creation	ontime1	18079.159068942	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	18082.300139189	Sum of GTIs [s]
			ontime3	18079.159048796	Sum of GTIs [s]
			l1events	537912	Number of level 1 events

2.1.4 Events

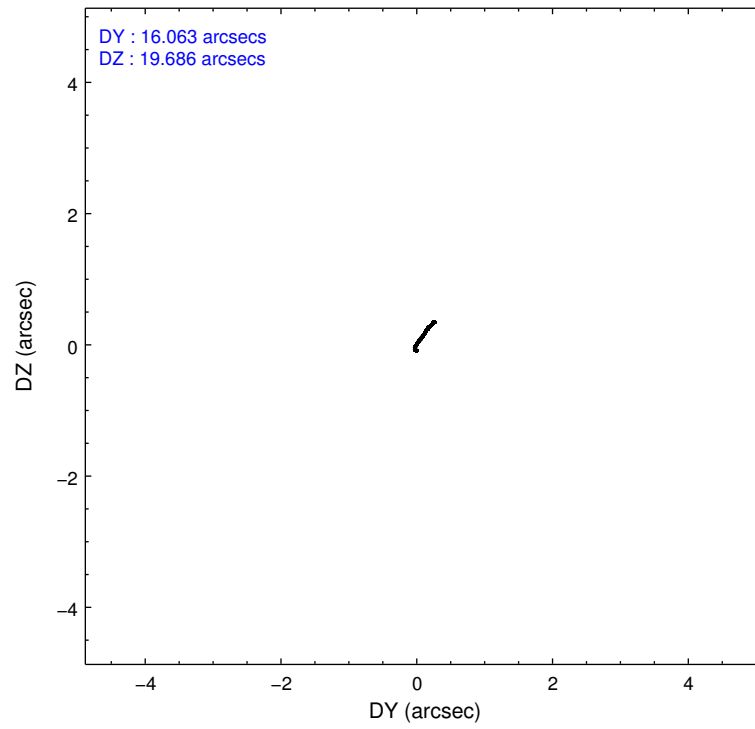
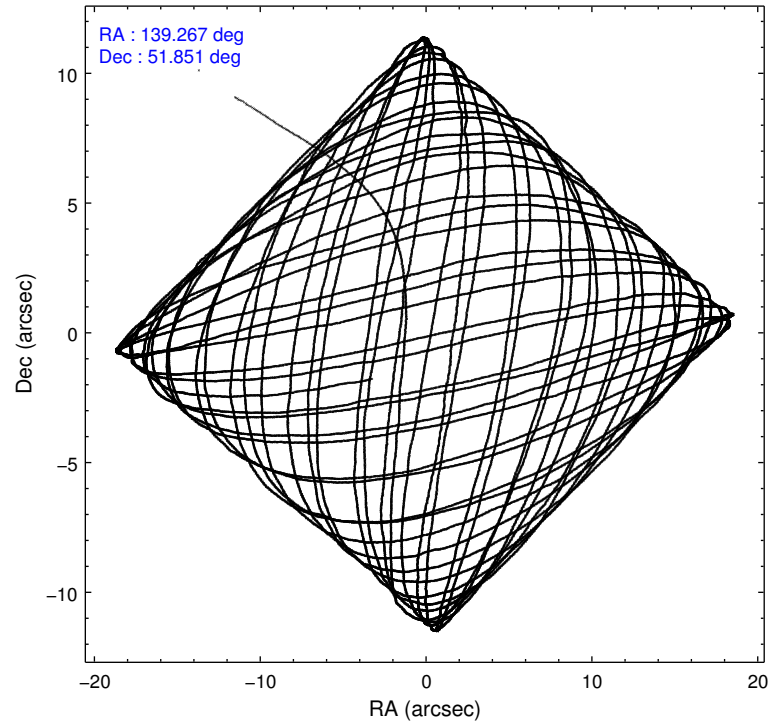
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	123512	140959	139491	133950
rejected events	108841	111108	124296	119909
rejected %	88%	78%	89%	89%

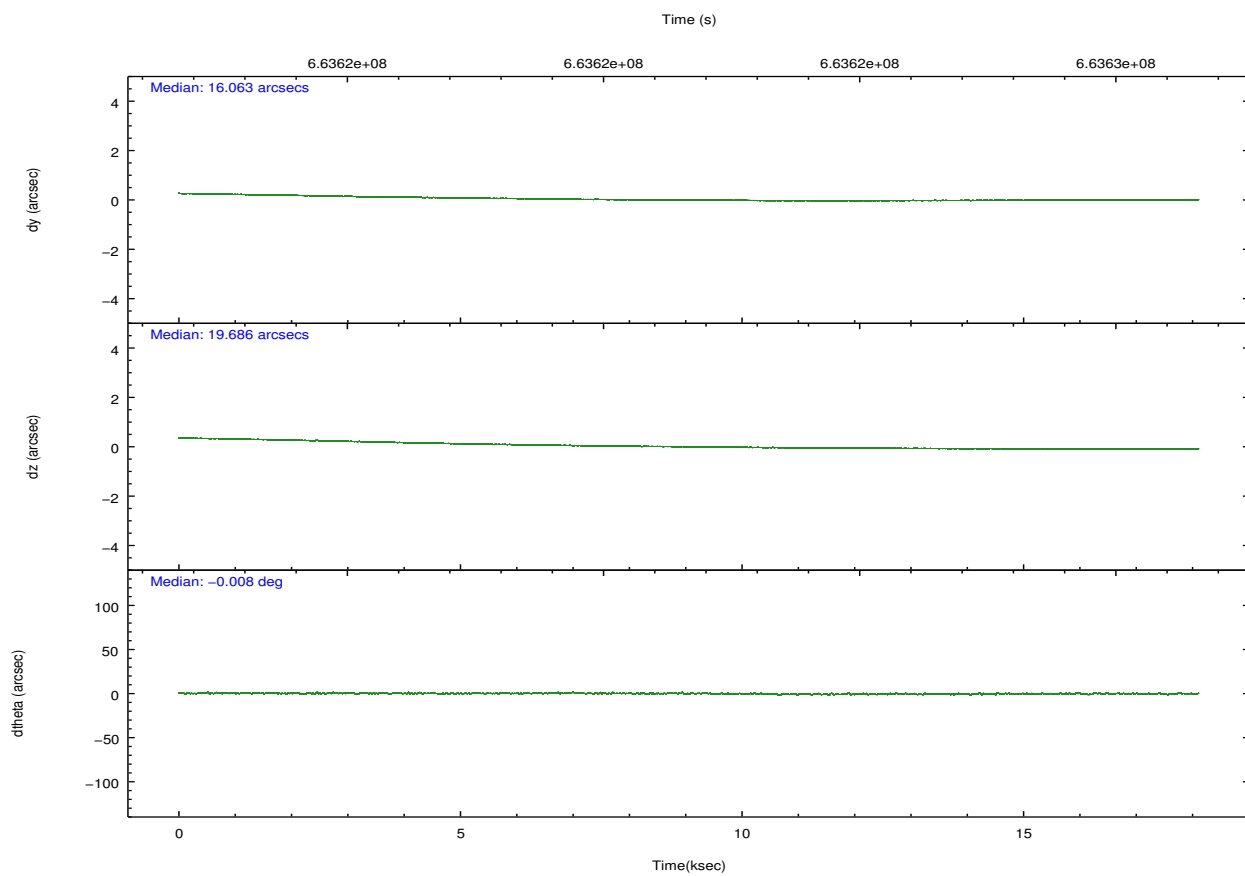
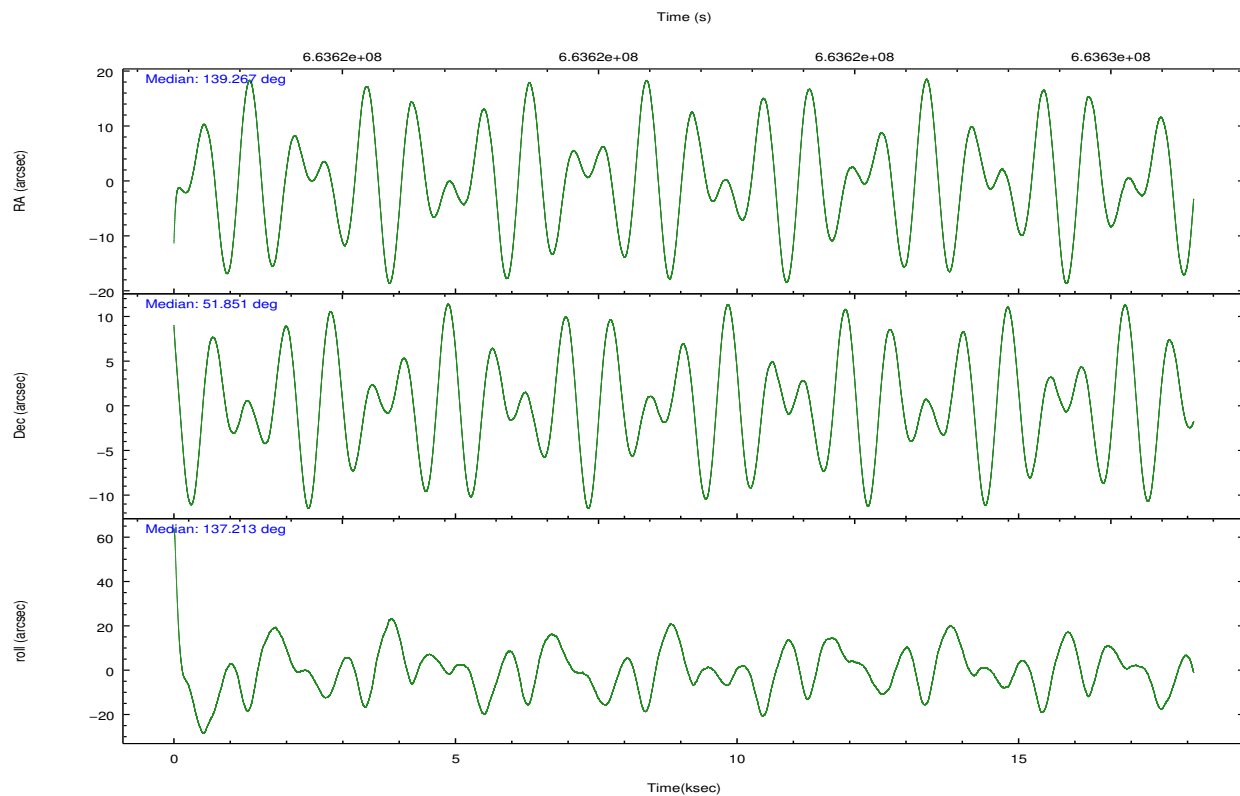
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	4787	13759	6075	4913
	3%	9%	4%	3%
grade 1 events	64	126	77	67
	0%	0%	0%	0%
grade 2 events	3762	9155	3330	3093
	3%	6%	2%	2%
grade 3 events	1507	1527	1467	1411
	1%	1%	1%	1%
grade 4 events	1427	1455	1447	1504
	1%	1%	1%	1%
grade 5 events	5548	5549	5261	6195
	4%	3%	3%	4%
grade 6 events	3190	3961	2878	3124
	2%	2%	2%	2%
grade 7 events	103227	105427	118956	113643
	83%	74%	85%	84%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-0123	ACIS-0123	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	139.310197	139.2665475483661	CCD I2 on	Y	Y
[deg] Pointing Dec	51.845285	51.85128740111517	CCD I3 on	Y	Y
[deg] Pointing Roll	136.974610	137.217673088763	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	N
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	N	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	663612738.184000	663611371.26727	CCD S5 on	N	N
Observation start date	2019-01-11T16:51:09	2019-01-11T16:29:31	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	663630738.184000	663631763.13099	On-chip summing requested	N	N
Observation end date	2019-01-11T21:51:09	2019-01-11T22:09:23	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



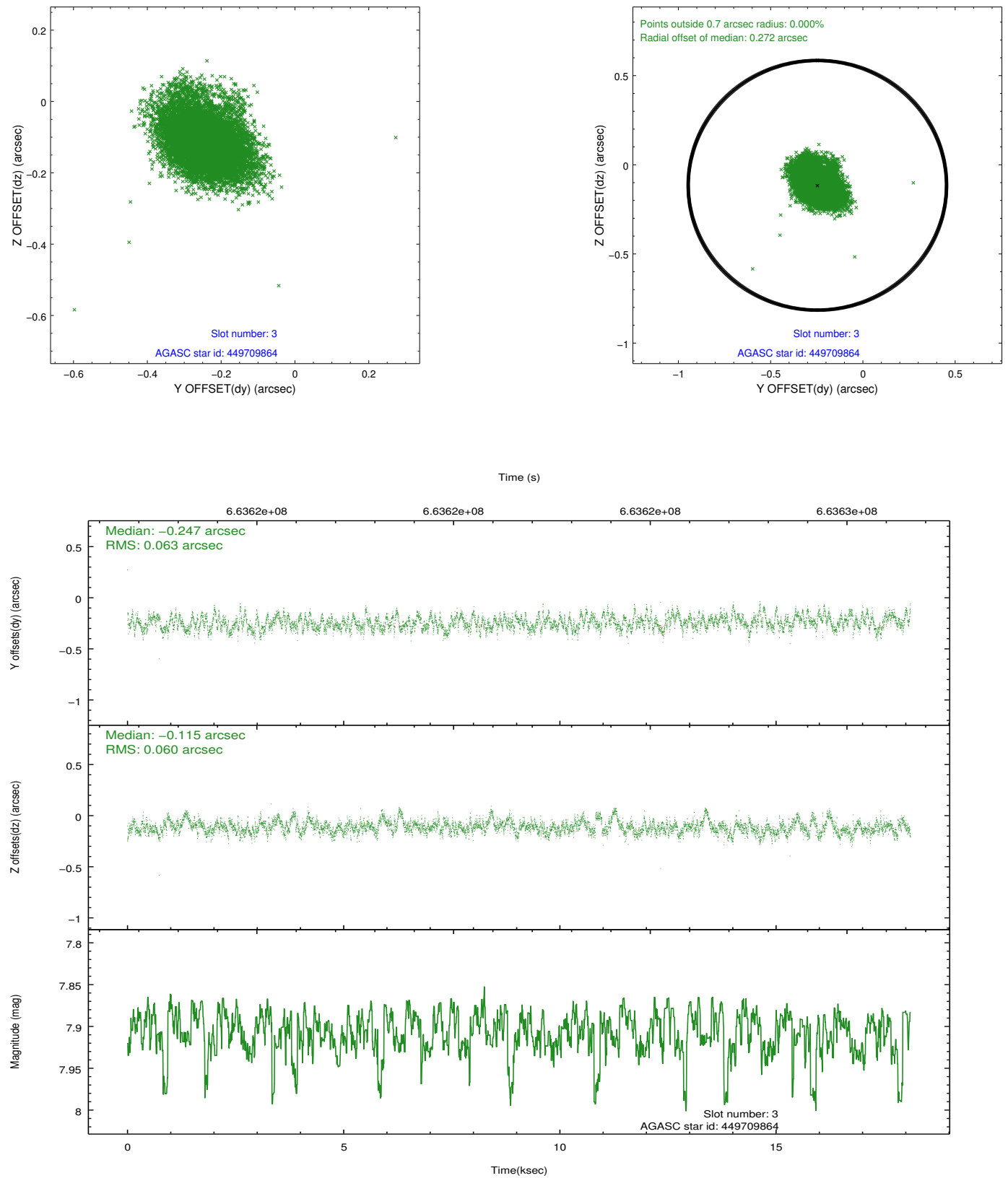


Slot Statistics

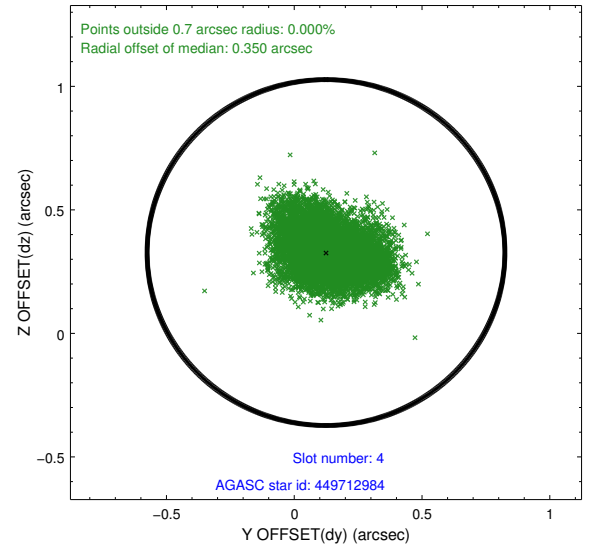
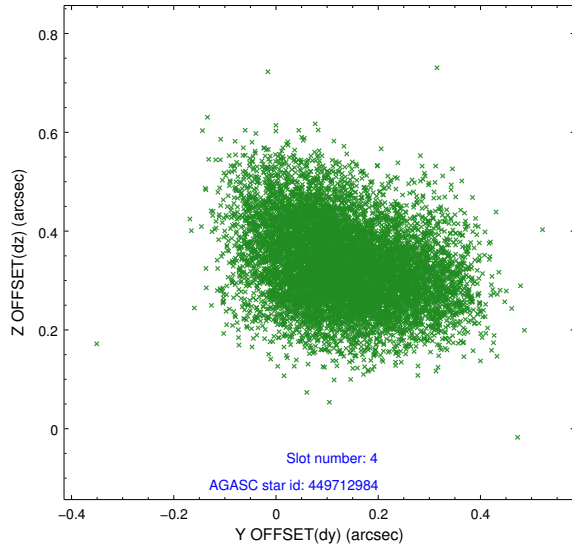
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.23	4416	1.000	0.087	-0.080	0.008	0.014	0.000000	0.000000	923.51	-843
1	FID		ACIS-I-5	7.22	4417	1.000	-0.545	-0.016	0.007	0.013	0.000000	0.000000	-1825.33	1053
2	FID		ACIS-I-6	7.24	4417	1.000	0.367	0.166	0.008	0.013	0.000000	0.000000	388.80	1698
3	GUIDE	used	449709864	7.91	8830	1.000	-0.247	-0.115	0.091	0.152	139.601682	51.402076	-1566.33	719
4	GUIDE	used	449712984	8.72	8823	1.000	0.124	0.327	0.147	0.237	139.803051	51.633381	-1322.98	-195
5	GUIDE	used	498865336	9.16	8824	1.000	-0.009	-0.036	0.223	0.369	139.050858	52.564533	2182.72	-1505
6	GUIDE	used	498868696	8.86	8821	1.000	0.050	-0.030	0.183	0.354	139.337086	52.680422	2009.39	-2237
7	GUIDE	used	449708784	9.27	8821	1.000	0.075	-0.158	0.191	0.304	139.281247	51.322176	-1236.09	1422

2.4 Star Slots

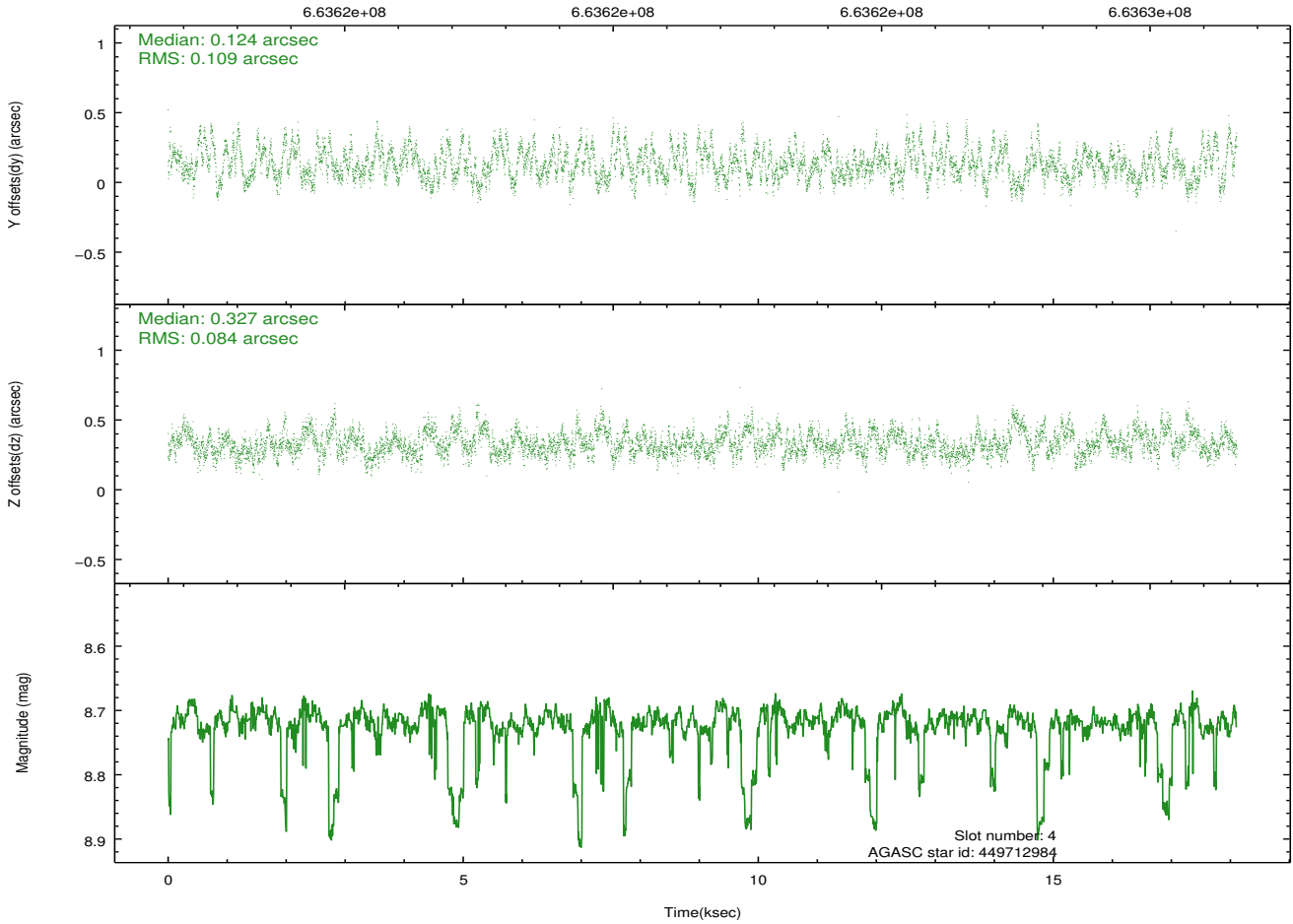
2.4.1 Slot 3



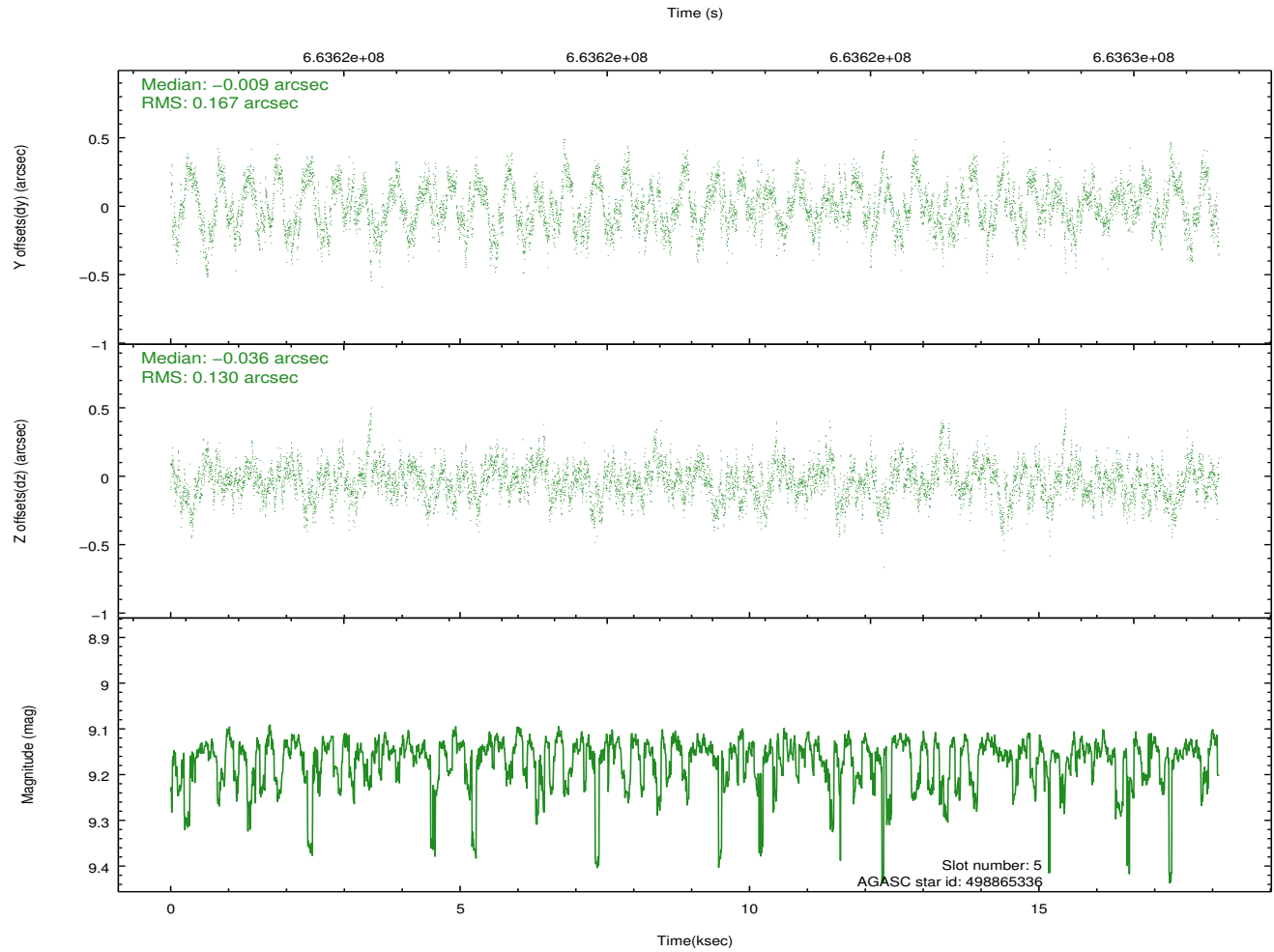
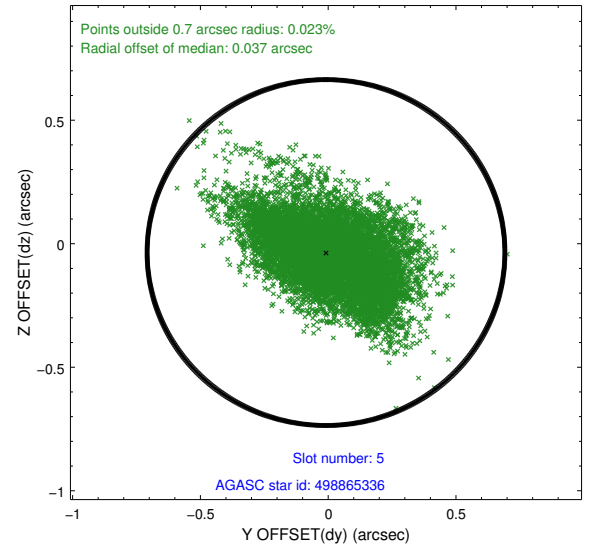
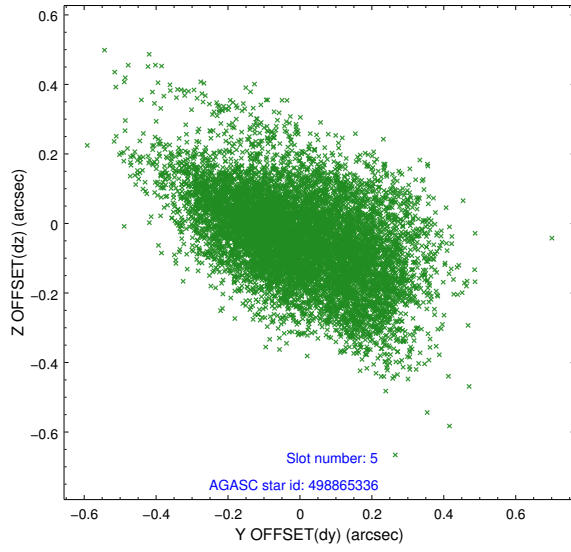
2.4.2 Slot 4



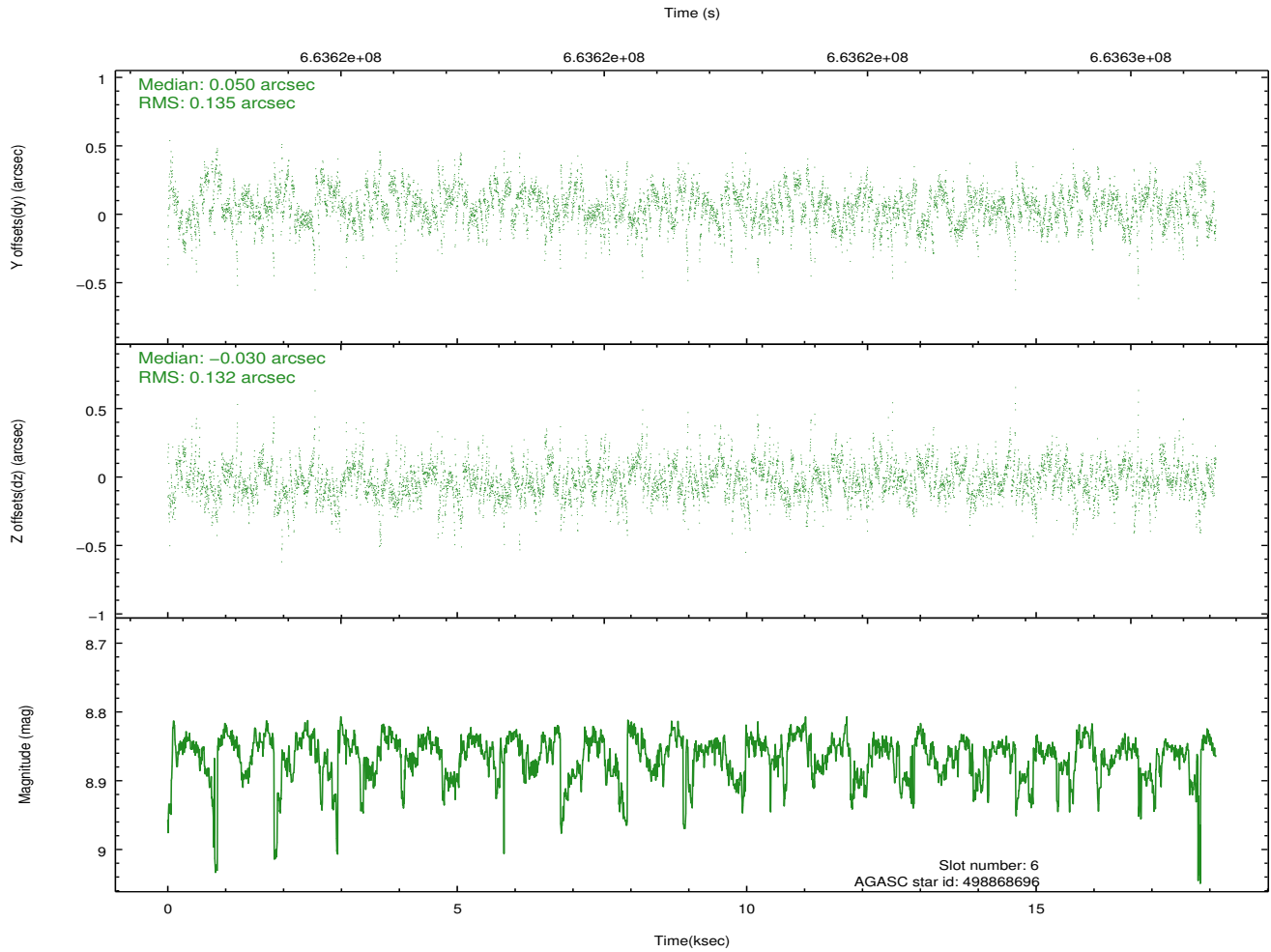
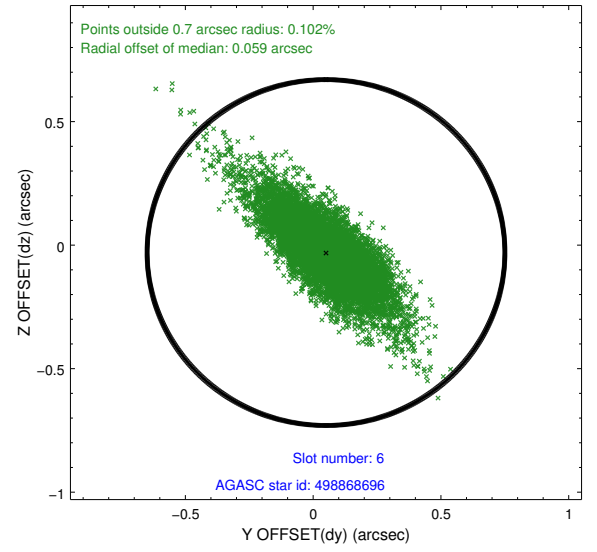
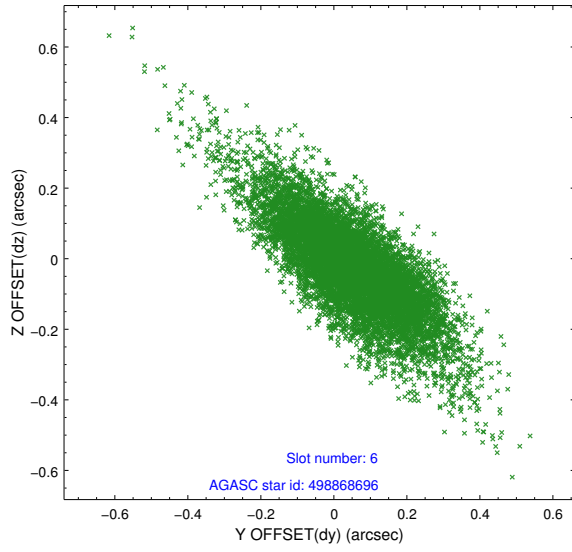
Time (s)



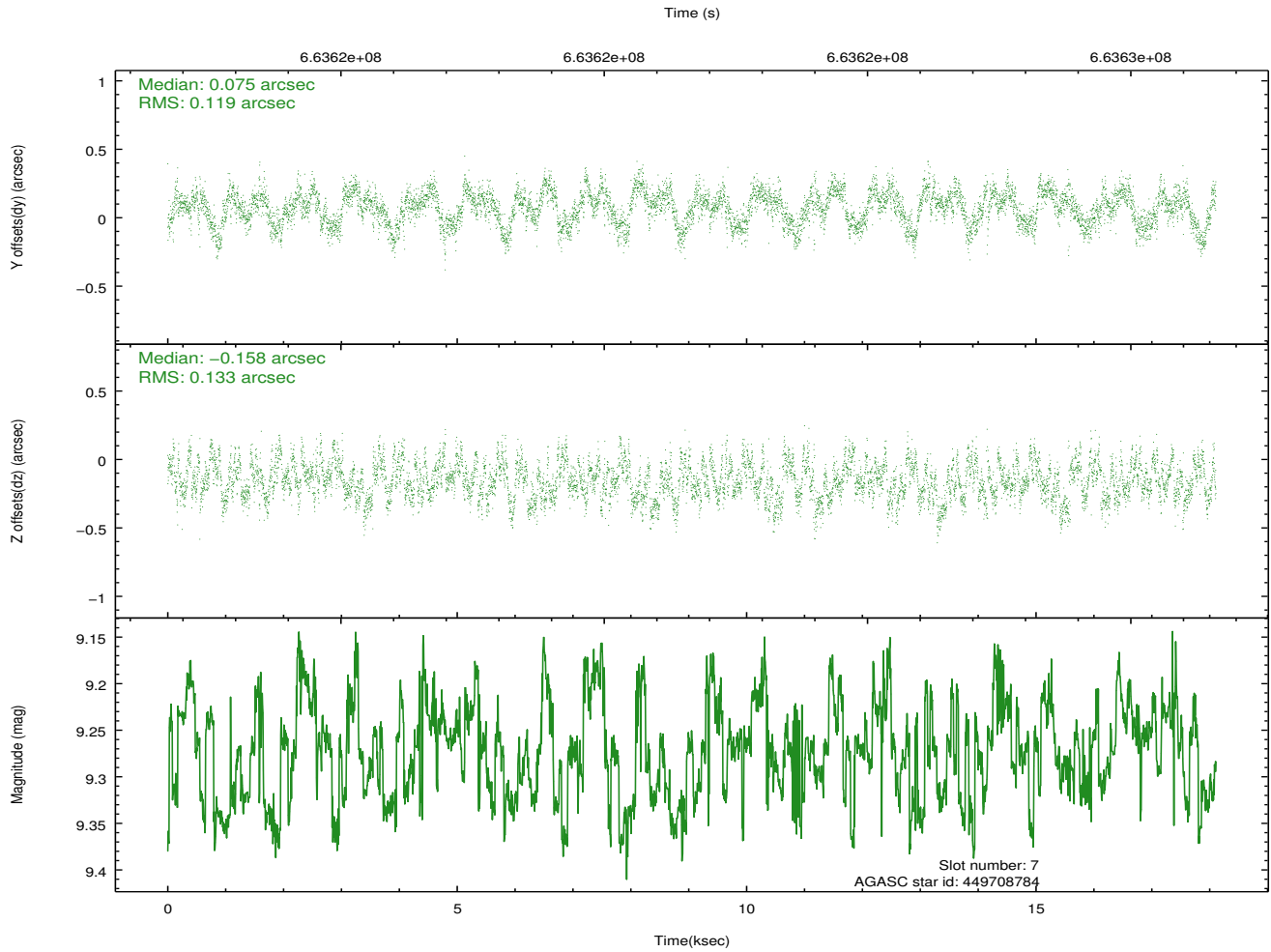
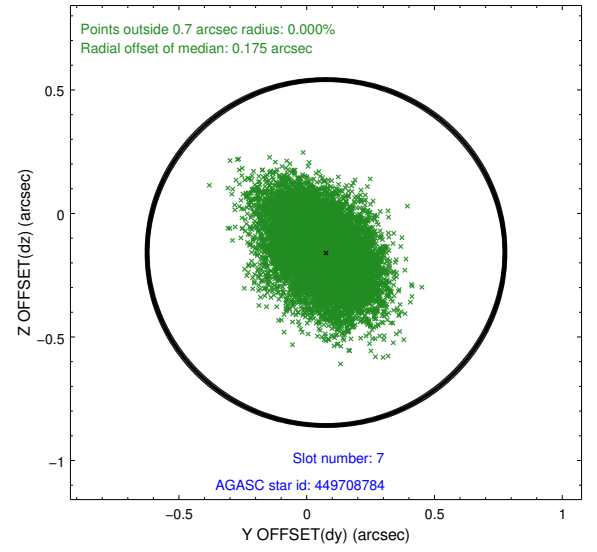
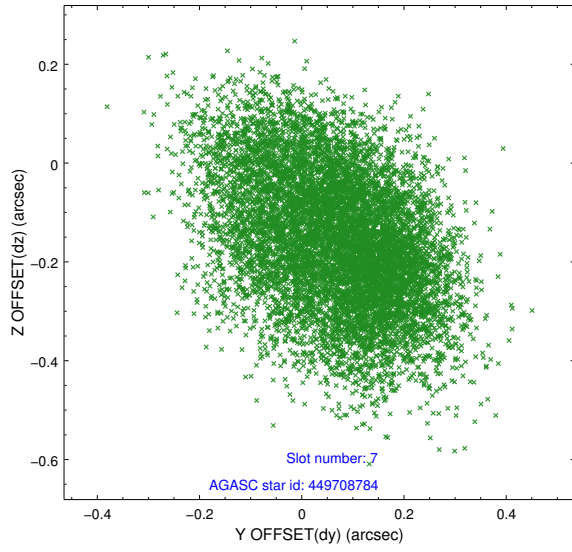
2.4.3 Slot 5



2.4.4 Slot 6

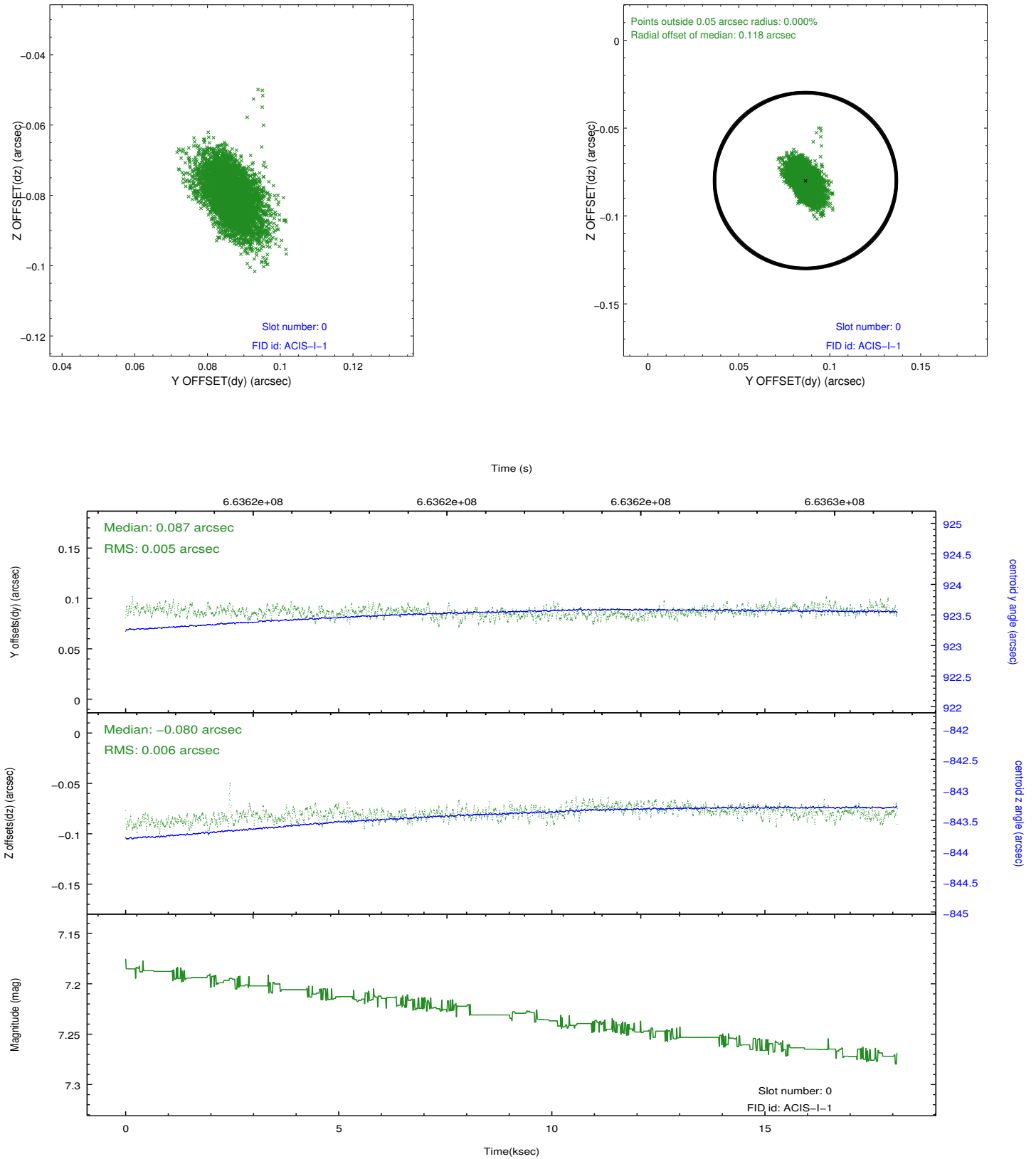


2.4.5 Slot 7

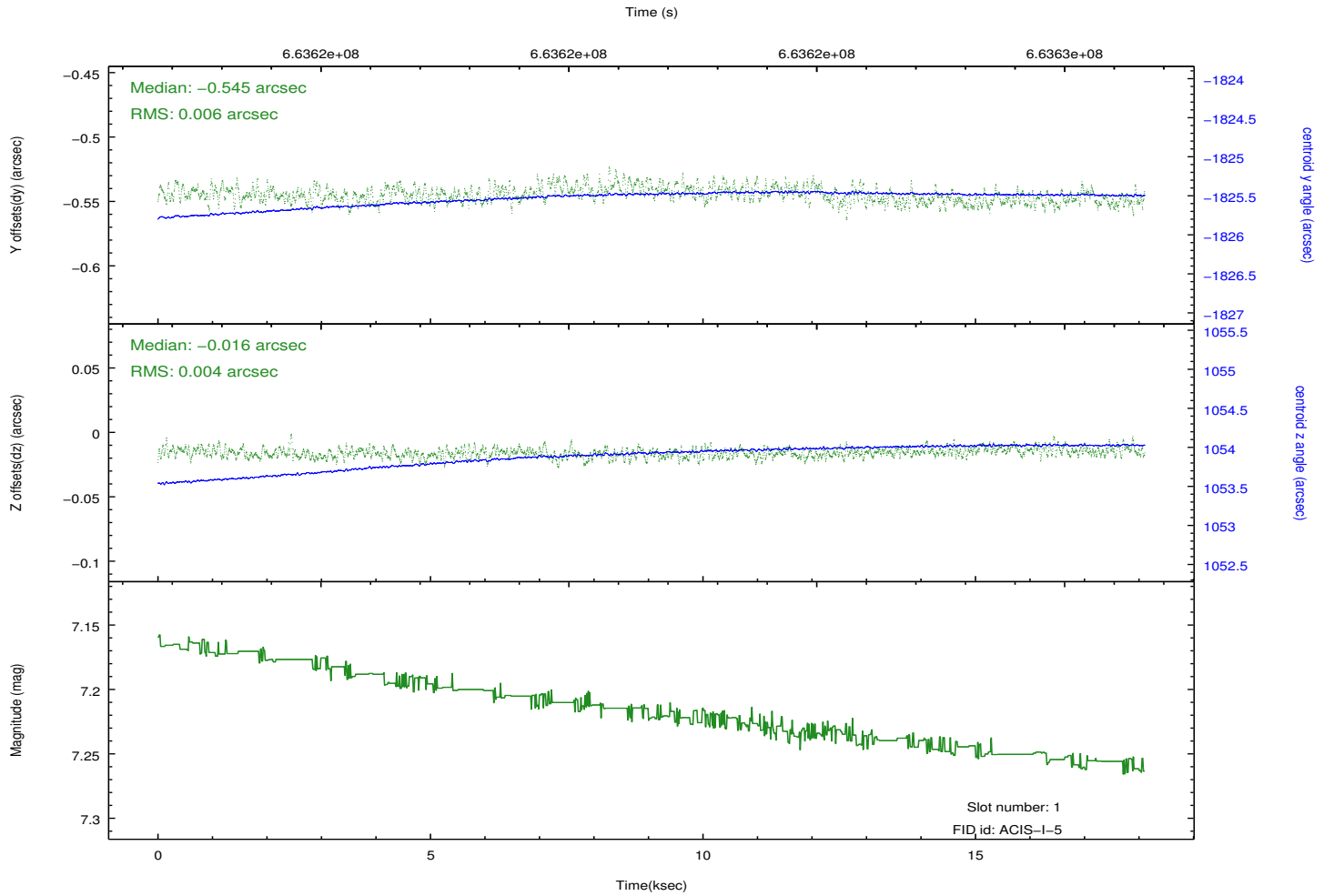
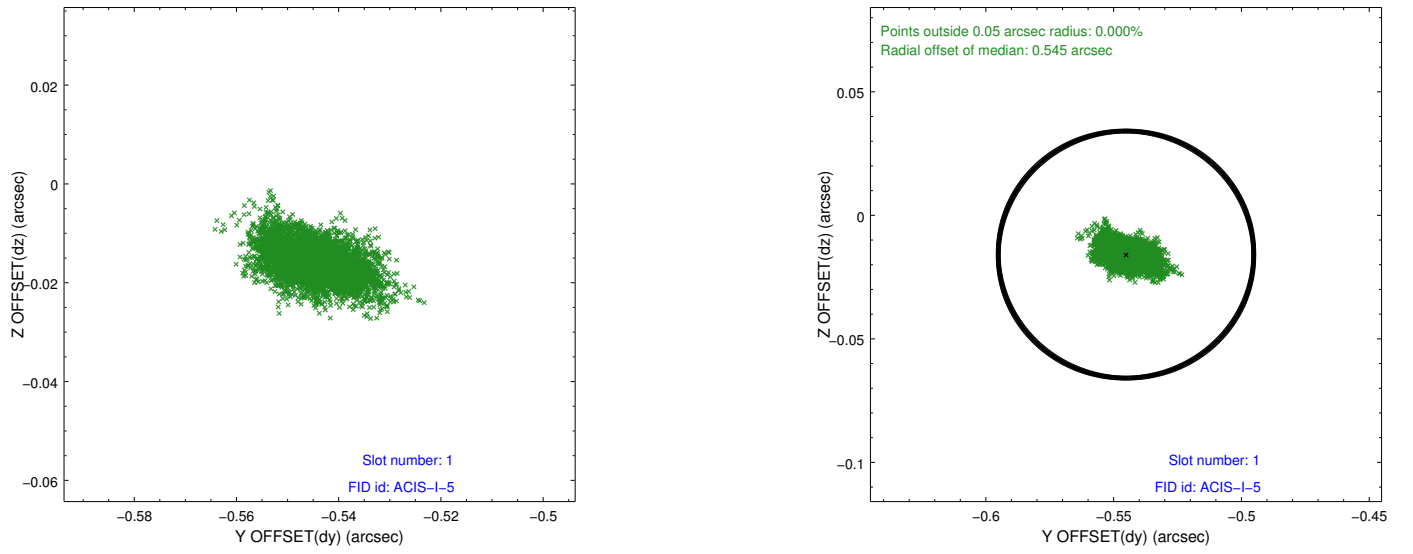


2.5 FID Slots

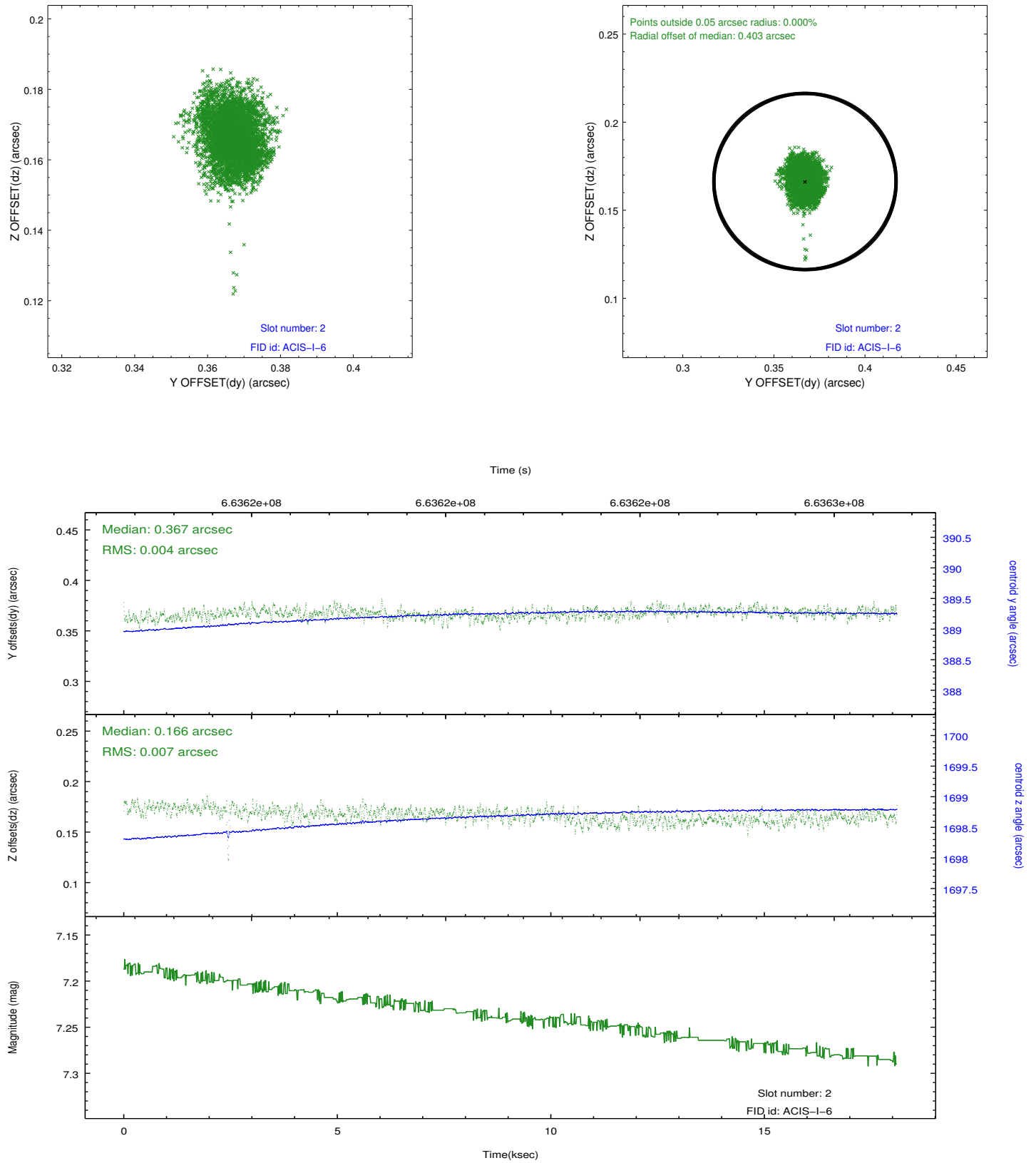
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2019.01.13
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	18.079159048796

A.2 Comments

One optional chip was dropped.

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The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/ACIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
 - 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
 - 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
 - 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
 - 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.
- In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.